

Remarks

New Claims 42 to 61 remain pending in this application. Claims 21 to 41 have been cancelled and are now replaced by the new Claims 42 to 61. Applicant respectfully submits that no new matter has been added in the new claims. Applicant requests the Examiner to withdraw the rejection for the following reasons:

Objections to the Drawings

The drawings are objected in that all box representations need descriptive labels under 37CFR 1.83. Applicant wishes to thank Examiner Brian Andrea for clarifying this objection to the Applicant's Attorney. Pursuant to the discussions, Figures 3 and 4 have been amended. In particular, a descriptive label for the box represented by reference numerals 66 and 68 in Figure 3 and descriptive labels for box represented by reference numerals 30, 32 and 76 and 78 have been included in the drawings.

Rejection under 35 U.S.C §103 (a)

Claims 21 to 41 are rejected under 35 U.S.C §103 (a) as being unpatentable over Haugen et al. reference (2002/0078580). Applicant respectfully traverses the rejection for the following reason.

Examiner has indicated in the office action has indicated that since the claimed "detecting the distance" does not have a link to the intended use of "examination" as claimed and consequently, the measuring head used for at least the height profiling by triangulation would be obvious in any environment. Applicant submits that Claim 42 now includes the environment in which the system is to be used.

Haugen et al. reference discloses an automated system for improved height sensing. The system as disclosed in the Haugen et al. reference is suitable for placing components on a circuit board (see Page 1, paragraph 6). In order to sense the height accurately, the system as disclosed in the Haugen et al. reference discloses a use of a

camera (see Figure 2 and Abstract). As disclosed, the camera performs the dual function of fiducial imaging and height sensing using an auxiliary off- axis light source and triangulation. Figure 5 of the Haugen et al. reference discloses the use of range sensors 300 & 302 in conjunction with the nozzle 208 to sense height h to board. However, the description expressly states the difficulty in measuring the distance beneath the nozzle (see page 3, para 0029). The purpose and the apparatus described in the Haugen et al. reference is substantially different from the apparatus claimed by the Applicant and any modification of the apparatus described in the Haugen et al. reference would render the Haugen apparatus unsatisfactory for its intended purpose.

Therefore, the Haugen et al. reference does not teach or disclose an apparatus comprising a “measuring head arranged at a distance from the target surface, wherein the measuring head consists of a radiation source and a radiation detector; a triangulation unit operating on the basis of optical triangulation for detecting the distance of the measuring head from the target surface without contact with the target surface, wherein the triangulation unit has a light emitter directed towards the target surface in an incidence axis and a light receiver pointing towards the target surface in the direction of a receiving axis; and a control device to set a constant measuring distance between the measuring head and the target surface.”

In view of the above, Applicants request the Examiner to withdraw the rejection under 35 U.S.C §103 (a).

Conclusion

Applicants have filed a complete response to the outstanding office action and only allowable claims remain pending in this application. In view of the above, Applicants request the Examiner to withdraw all rejections. If a personal conversation will expedite the prosecution of this application, the Examiner is requested to call the undersigned at 317-521-2851.

The Examiner is hereby authorized to charge Deposit Account No. 02-2958 for any fees associated with the filing of this Amendment. A duplicate copy of this sheet is enclosed.

Respectfully submitted,



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